Responsible Office: Office of Mission Assurance, Office of Safety and Mission Assurance

SUBJECT: Langley Research Center (LaRC) Requirements for Safety-Critical Product Testing

1. POLICY

a. This directive defines safety-critical products and prescribes policy and responsibilities for conducting receipt inspection and quality assurance testing on safety-critical products prior to distribution or use at Langley Research Center (LaRC).

b. Safety-critical products are subject to the following policy, unless such items fall under Attachment A, Exceptions:

(1) All safety-critical products, regardless of procurement method or source of supply, shall be sent to the Receipt, Inspection and Quality Assurance (RIQA) Laboratory upon delivery.

(2) No safety-critical products may be distributed or utilized at LaRC prior to receipt inspection and quality assurance testing by the RIQA Laboratory.

c. Prior to use, users of safety-critical products must assure that evidence of compliance to this policy is available for each safety-critical item. Alternatively, a sample of the product may be provided to the RIQA Laboratory prior to use if lot traceability has been maintained. When lot traceability has been lost, the product cannot be used in a safety-critical application.

2. APPLICABILITY

This policy is applicable to safety-critical products, as defined in Attachment B, procured by the Government. Safety-critical products procured by contractors and provided to the Government are subject to the quality assurance requirements defined within their respective contracts. Such products may be subject to quality assurance audits as provided by the terms and conditions of the contract.

3. AUTHORITY

None

4. REFERENCES

a. LAPD 5330.3, “Langley Research Center (LaRC) Standards for the Acquisition or use of Threaded Fasteners.”

b. LPR 1740.4, “Facility System Safety Analysis and Configuration Management.”

5. RESPONSIBILITIES

a. All Recipients of Safety-Critical Products (regardless of procurement mechanism)

(1) Ensure that the products are tested by the RIQA Laboratory prior to use or distribution of the products.

(2) Call the RIQA Laboratory (864-6887 or 864-6890) if unsure whether any given product requires RIQA testing prior to use and distribution at LaRC.

b. Office of Logistics Management

(1) Ensure that all safety-critical stock and excess products received at the Center are tested prior to incorporation into Center stock or dissemination to users.

6. DELEGATION OF AUTHORITY

None

7. MEASUREMENTS

None

8. CANCELLATION

LAPD 4520.1 dated December 21, 2000

Delma C. Freeman, Jr.
Acting Director

Attachments A-B

EXCEPTIONS

1. System components (e.g., high-pressure piping systems) that are assembled into a system that is (1) designed, built, and tested in accordance with National Consensus Codes; (2) placed or to be placed into the Center's Configuration Management program; **and** (3) maintained in accordance with National Consensus Codes, and Agency and Center policies, are exempt from this policy. ***NOTE: REPLACEMENT COMPONENT PARTS NOT TESTED WITH THE INITIAL ASSEMBLED SYSTEM ARE SUBJECT TO THIS POLICY***.

2. Assembled spaceflight products/systems undergoing design/specification reviews and government oversight are exempt from this policy.

3. Upon written request for exemption, safety officials from the Office of Safety and Mission Assurance may review a specific product/system and grant a waiver from this policy. Users must maintain the written waiver as evidence of compliance with this policy.

DEFINITION

1. A safety-critical product is any item that meets any of the following conditions:

a. A high-strength fastener, as defined in LAPD 5330.3 (note: all high-strength fasteners shall be checked because of their potential usage in a safety-critical application);
b. High-pressure (> 125 psi) piping and components;
c. Item failure could result in a wind tunnel model damaging a facility;
d. Item failure could result in a catastrophic event as defined in LPR 1740.4;
e. Item failure could result in loss of flight hardware (aircraft or space); or
f. Stock item designated with a “QC” code.

2. Examples of potential safety-critical items:

a. All high-strength fasteners (reference LAPD 5330.3, “Langley Research Center Standards for Acquisition or Use of Threaded Fasteners”). Fasteners include the following:

- Bolt-Machine
- Key-Socket Head Screw
- Nut-Plain, Hexagon
- Nut-Self-Locking, Extended
- Nut-Self-Locking, Hexagon
- Screw-Cap, Socket Head
- Screw-Cap, Hexagon Head
- Screw-Machine
- Screw-Self-Locking
- Setscrew
- Washer-Flat
- Washer-Lock

b. High-Pressure Fittings include the following pipes, tubes, tube fittings, adapters, nuts, valves:

- Adapter-Straight, Pipe to Tube
- Adapter-Straight, Tube to Hose
- Brushing-Pipe
- Cap-Tube
- Coupling-Pipe
- Cross-Pipe
- Elbow-Pipe
- Elbow-Pipe to Tube
- Elbow-Tube
- Nipple-Pipe
- Nut-Union
- Pipe-Metallic
- Plug-Tube Fitting, Threaded
- Reducer-Tube
- Sleeve-Flared, Tube Fitting
- Tee-Tube
- Thread Piece-Union
- Tube-Metallic
- Union-Pipe
- Union-Tube
- Valve-Angle
- Valve Assembly-Relief and Regulating
- Valve Ball
- Valve-Check
- Valve-Globe
- Valve-Regulating, Fluid Pressure
- Valve-Safety Relief

c. Metal plates and shapes include the following:

- Angle-Structural
- Blade-Band Saw
- Bar Metal
- Billet-Metal
- Sheet-Metal
- Strip-Metal
- Plate-Metal

d. Electronic/electrical parts include the following adapters, cables, capacitor, clamps, connectors, jacks, leads, plugs, relays, retainers, resistors, switches, terminals, transistors, and wires:

- Adapter-Connector
- Adapter-Test
- Cable-Power, Electrical
- Cable-Radio Frequency
- Cable-Special Purpose, Electric
- Capacitor-Fixed, Ceramic Dielectric
- Capacitor-Fixed, Electrolytic
- Capacitor-Fixed, Mica-Dielectric
- Capacitor-Fixed, Plastic Dielectric
- Clamp, Cable-Electrical Connector
- Connector-Assembly-Electrical
- Connector Body-Plug, Electrical (BNC)
- Connector-Components
- Connector Plug, Electrical
- Connector Plug, Electrical (BNC)
- Connector Plug, Electrical (KPT)
- Connector Plug, Electrical (SMA)
- Connector-Receptacle, Electrical
- Detent-Switch
- Fuseholder-Extractor Post
- Jack-Telephone
- Jack-Tip
- Lead-Test
- Lead Set-Test
- Null Modem Interface-Connector
- Post-Binding, Electrical
- Plug-Telephone
- Plug-Tip
- Relay-Electromagnetic
- Retainer-Electronic
- Resistor-Adjustable
- Resistor-Fixed, Composition
- Resistor, Fixed, Film
- Resistor Fixed, Wire Wound
- Resistor-Variable, Hybrid
- Resistor-Variable, Nonwire Wound
- Resistor-Variable, Wire Wound
- Semiconductor Device-Diode
- Semiconductor Device-Unitized
- Semiconductor Device-Zener Diode
- Shield-Electronic Connector
- Socket-Plug-In Electronic
- Surge Protector
- Switch-Mercury
- Switch-Push
- Switch Section-Rotary
- Switch –Sensitive
- Switch-Toggle
- Test Adapter
- Terminal Board
- Transistor
- Wire-Electrical